

### **REMARKS/ARGUMENTS**

Please treat this Amendment accompanying a Request for Continued Examination as a request to withdraw the present appeal and reopen prosecution of the Application. The Amendment to claims 1, 5, 8, and 19 clarifies that varying the ratios of silicon and oxidizing processing gases occurs *throughout* the deposition of the conformal layer (*i.e.*, continuously). Support for the Amendment can be found in the Specification, p. 2, ll. 26-29. In light of the Amendment, reconsideration and withdrawal of the outstanding rejections is respectfully requested.

In the Examiner's Answer of April 21, 2008, the Office noted that "as the claims are written, only one variation in ratio is required during the deposition of the conformal layer, and not a continuous variation as the applicant often cites in the instant arguments." (*Examiner's Answer*, p. 10, ll. 1-4). The Amendment clarifies that the variation in ratio occurs *throughout* the deposition of the conformal layer, and is not varied just once during the deposition. Thus, the rejection of the amended claims is respectfully traversed.

#### **A. *Xia* Does Not Describe or Suggest A Change In A Ratio of Deposition Precursors Between the Beginning and End of a Film Layer Throughout the Deposition**

The rejection of claims 1, 5, 8-11, 13-14, 19-22 and 24 under 35 U.S.C. 103(a) over U.S. Patent No. 6, 218,268 to *Xia* is respectfully traversed in light of the Amendment. Claims 1, 5, 8 and 19 are amended to clarify that varying a ratio of silicon processing gas (or silicon and phosphorous processing gas) and oxidizing processing gases while forming a conformal layer occurs *throughout* the deposition of the conformal layer. In other words, there is a continuous variation of the ratio during the deposition of the conformal layer.

While *Xia* described a change in the ratio of processing gases (*i.e.*, dopant and associated carrier gases) at the transition point between high and low pressure deposition environments, the reference did not describe or suggest varying the ratio throughout the deposition of a layer (*Xia*, col. 15, ll. 14-17). In some instances the transition was sudden as the stream of dopant and associated carrier gases "abruptly switched from the exhaust system to the

chamber during the transition" (*Xia*, col. 15, ll. 14-16). In other instances, the transition was more gradual using "a proportional valve that allows the gradual, or ramped, diversion of dopant from one output to the next" (*Xia*, col. 15, ll. 17-19). In both instances however, *Xia* is describing a change in the ratio of process gases during the transition between deposition environments, and not throughout the deposition of a layer.

*Xia*'s experimental results are also consistent with a process that only varies the process gas ratios during a transition between deposition environments or layers. Fig. 11 shows an elemental analysis versus depth of a multilayer BPSG film formed by the dopant bypass processes of *Xia*. The dopants B (1104) and P (1102) are characterized by long plateaus with little change in concentration before a sharp decline. This ion signature is consistent with a process that keeps the ratios of the process gases relatively unvarying for most of the deposition, before changing them at the transition to new deposition conditions (e.g., a switch between high and low pressure deposition environments). The elemental analysis of the B and P dopants in Fig. 11 neither describe nor suggest that a flow rate ratio of dopants is varied throughout the deposition of a BPSG layer.

For at least this reason, *Xia* does not describe or suggest varying throughout the deposition of a conformal layer a ratio of a (silicon-containing processing gas plus phosphorous-containing processing gas):(oxidizing processing gas) as described in claim 1, varying throughout the deposition of a conformal layer a ratio of a (silicon-containing processing gas):(oxidizing processing gas) as described in claims 5 and 8, and varying throughout the deposition of a substantially conformal layer a ratio of (silicon-containing gas):(oxidizing gas):(phosphorous-containing gas) as described in claim 19. Accordingly, claims 1, 5, 8, and 19 (and their dependent claims) are allowable over *Xia*, and withdrawal of the rejection of claims 1, 5, 8-11, 13-14, 19-22 and 24 under § 103(a) is respectfully requested.

The remaining rejections over *Xia* in view of the secondary references to *M'Saad*, *Jeng*, and *Vassilev* are traversed for the same reason: None of these references remedy the deficiency with *Xia* failing to describe or suggest varying a ratio of silicon processing gas (or silicon and phosphorous processing gas) and oxidizing processing gases while forming a conformal layer occurs *throughout* the deposition of the conformal layer. Thus withdrawal of

the rejections of claims 2, 3, 6, and 7 under § 103(a) over *Xia* in view of *M'Saad*; claims 4, 12 and 23 under § 103(a) over *Xia* in view of *Jeng*; and claims 15-18 and 25-28 under § 103(a) over *Xia* in view of *Vassilev* is also respectfully requested.

**CONCLUSION**

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 303-571-4000.

Respectfully submitted,

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